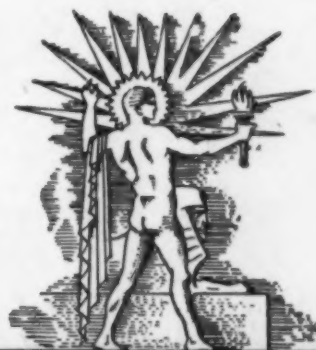
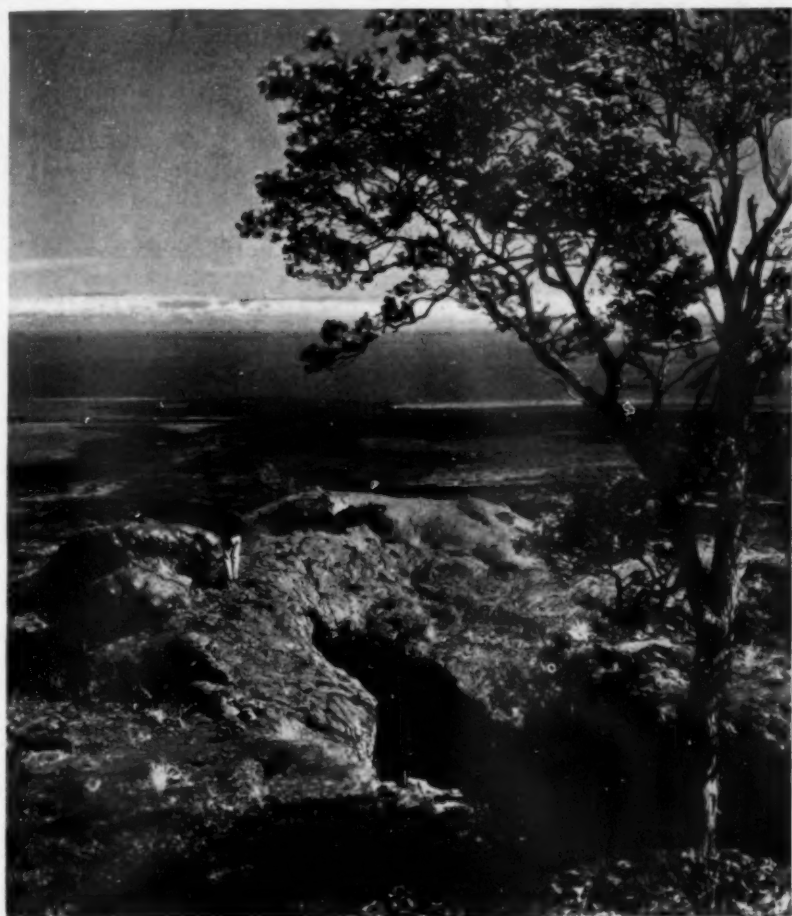


OCT 5 1937

SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE



October 2, 1937

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See Page 218

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The Weekly



Summary of

Current Science

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DO YOU KNOW?

One-half of the shade trees of New England are elms.

A tire designed to resist side skidding has been produced for trailers.

Silkworms raised in Kent, England, furnished silk for the velvet robe worn at the recent coronation by Queen Elizabeth.

Highway mileage in China doubled from 1930 to 1935, and roads are being built there at the rate of 15,000 miles a year.

A one-can meal is in prospect, since a patent has been granted on a tin with compartments for packing an assortment of foods.

A chemist and artist working together have found a chemical spray with which a wall can be kept moist for 56 hours; thus enabling mural painters to work over twice as long on a surface before it is too dry to take the colors.

British archaeologists say that more than 30 places have been suggested as the site of the great battle of Brunanburh, fought by king Athelstan against a Viking contender for the throne of York, a thousand years ago—A. D. 937.

An Arab geographer of the twelfth century, describing Britain, said it had fine people but "perpetual winter reigns there."

British naturalists are studying the migration of butterflies, by marking with little spots of paint as many as they can catch.

Tuberculosis is believed rare among wild animals in their natural state; but a British scientist has found this disease in 134 field mice.

An albino tarpon, a 27-pound fish with white skin and pink eyes, was caught off the west coast of Florida in 1936 and is believed unique in fishing annals.

A method of filtering fluorine out of drinking water, at a cost of half a cent a gallon, is expected to help prevent the dental condition known as mottled enamel due to fluorine.

Almost 200 clay sherds marked with the name Themistocles have been unearthed in a well in Athens, and are believed to be unused ballots prepared by Themistocles' enemies for readiness in the voting that banished the famous leader.

WITH THE SCIENCES THIS WEEK

Most articles are based on communications to Science Service or papers before meetings, but where published sources are used they are referred to in the article.

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ARCHAEOLOGY

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Who was the "Father of Modern Industrial Chemistry"? p. 214.

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RADIOLOGY

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Why do patients sometimes have to wear gas masks? p. 213.

SAFETY ENGINEERING

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VITAL STATISTICS

At what age is the pedestrian in most danger from automobile injury? p. 216.

VOLCANOLOGY

Can volcanic eruptions be predicted? p. 218.

MEDICINE

Insulin Shock Slows Down Brain Activity, It Is Found

Thinking Part of Brain, Which Requires Largest Fuel Supply, Is First To Be Affected By the Injection

PATIENT suffers from severe form of insanity, schizophrenia, called "split personality" by the man in the street. Viennese doctor finds that powerful shock from insulin, life-saver to diabetics, effects remarkable cures.

Thus the first two chapters of "perhaps the most important advance in the treatment of mental disease in many years." Now a third chapter is added:

Insulin shock slows brain, particularly conscious regions, down to tiny fraction of former activity.

This was the report (*Science*, Sept. 17) by four psychiatrists, Prof. Harold E. Himwich and Dr. J. F. Fazeckas of Yale University and Drs. Karl M. Bowman and Joseph Wortis of Bellevue Hospital. Their work may lead to an explanation not only of the cure but of the way in which the brain works as well.

Tests on the blood entering and leaving the brain during the shock revealed that the supply of glucose, the brain's fuel, and oxygen with which to burn that glucose, are reduced by two-thirds,

the four research scientists declare.

Sixty-five per cent. of the oxygen and almost five-sixths of the sugar ordinarily present are not available to the brain in the presence of the shock dose of insulin. "Insulin, in reducing the blood sugar, deprives the brain of its food-stuff," thus slowing down the rate of activity of the brain.

Metabolism of the entire brain, the authors remark, is depressed by the injection of the insulin, but since the rate of activity differs in different parts of the brain, it is manifested first in that part of the brain requiring the largest fuel supply, the cerebral hemispheres, where conscious actions are controlled.

Support for this view of the effect of the radical but effective insulin cure is found in the fact that coincident with the shock and the slowing down of the brain, normal reflexes gradually give way to a state in which the patient makes no response to ordinary stimuli, the four find.

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PSYCHOLOGY

War Seen as Mental Ill Attacking Whole Nations

WAR IS a mental disease that attacks nations instead of individuals, in the opinion of scientists taking part in a special session of the American Psychological Association meeting. The special session was devoted to a consideration of human conflict.

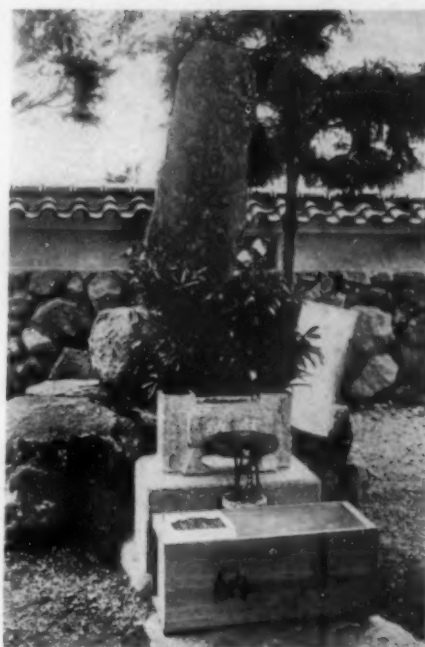
Society's mental ills, like those of the individual, are caused by the frustration or inability to satisfy certain deep-seated human needs, these scientists believe.

"Labor strife, class antagonisms, and wars between nations are as much products of these frustrations as are the emotional maladjustments and neuroses of the individual," declared Dr. Robert R. Sears, of Yale University's Institute of Human Relations.

Much progress toward the prevention of mental disease in the individual has been made by the recent mental hygiene program, but prevention of the mental diseases afflicting nations and groups of people in society must, except for a lucky accident, wait for a better scientific understanding of their causes and the natural laws controlling them. Dr. Sears called the reports at the special session a beginning to that end.

"In this era of violently conflicting theories about human affairs, with opinion and prejudice fighting for control over reason, this return to experimental method cannot help but be a healthy influence," Dr. Sears said.

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TOMB OF DISCOVERER

Here lies Hsu Shih, a Chinese alchemist who sought magical islands where life would be eternal. He found Japan.

ANTHROPOLOGY

Scientific Expedition From China Helped Found Japan

ONE ASPECT of the present conflict between China and Japan is that the latter with its latest technologic aids to warfare, represents the return, in a 2,000-year delayed sense, of ancient Chinese scientists.

While the Greeks coined the present word for alchemy, written records show that the Chinese practiced alchemy too and that there, as in the western world, science got its start in searches for the elixir of life and the transmutation of base metals to gold.

Emperor Shih Huang Ti, whose Great Wall is among the battle sites of the present-day conflict, was among those who sought, through his alchemists, to find the secret of immortality.

In a recent report to the American Chemical Society Prof. Tenney L. Davis of Massachusetts Institute of Technology, aided by the Japanese scientist Rokuro Nakaseko, described from old manuscripts how Emperor Ti was influenced by two of his favored alchemists to send a large expedition to search for and colonize three mythical islands whereon the inhabitants would dwell in peace and with immortal life.

The expedition sailed but never re-

turned. The leading scientist—pardon, magician—became the king of the new country. Emperor Ti paced the shores of China for three years seeking his expedition to what has since turned out to be Japan.

Thus ancient Chinese scientists helped found Japan. If present efficiency of operation is any indication, the descendants of those scientists are equally proficient in getting what they want.

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PUBLIC HEALTH

Military Activity in China Has Increased Neurosyphilis

NEUROSYPHILIS has increased in China as a result of the official and unofficial warfare that has disturbed that country for the past quarter century, Dr. J. L. Maxwell of the Henry Lester Institute of Medical Research in Shanghai reports. The institute has now completed its third year of work.

"During the last 25 years a licentious soldiery has overrun the countryside and has raised the incidence of neurosyphilis both by spreading infection and, according to Dr. Maxwell, by inducing a state of nervous strain in the rural population," states a resume of the report in the *Lancet* (Sept. 11).

Typhoid fever, a rarity among the Chinese population 30 years ago, has now become one of the commonest causes of admission to hospitals and at

the top of the list of deaths from infections. Medical and health authorities cannot explain why this disease should have increased so during the period in which cleanliness and water supplies have "vastly improved" along the coast and inland towns.

Appendicitis has also increased greatly, particularly among the wealthy city population. This, it is thought, may be due to changes in diet.

The medical institute has carried out studies of dietetic defects and nutritional diseases in the rural districts and among the factory workers in towns. More than half of the younger factory workers show signs of malnutrition, mainly "from lack of animal fats and first class protein in their diet."

Commenting on the work of the in-

stitute, the editor of the *Lancet* states:

"It seems tragic that such valuable work should receive a check. We are glad of an assurance that the institute has so far escaped damage and we may hope that Dr. H. G. Earle and his 30 assistants will soon be free to continue their work unmolested."

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SAFETY ENGINEERING

Grade-Crossing Accidents Hit Six-Year High

A NEW version of the "man-bites-dog" story is told in the account of last year's grade-crossing battle between road and rail.

The once popular sport of racing the locomotive has given away to crashing into the sides of sleepers or freight cars going by at night, accident figures reveal. More than four-fifths of accidents at grade crossings at night last year occurred in that fashion.

More than half of the accidents reported in Illinois occurred at crossings protected by gates, signals or watchmen. One railroad reports that heedless motorists crashed into more than 500 of its gates.

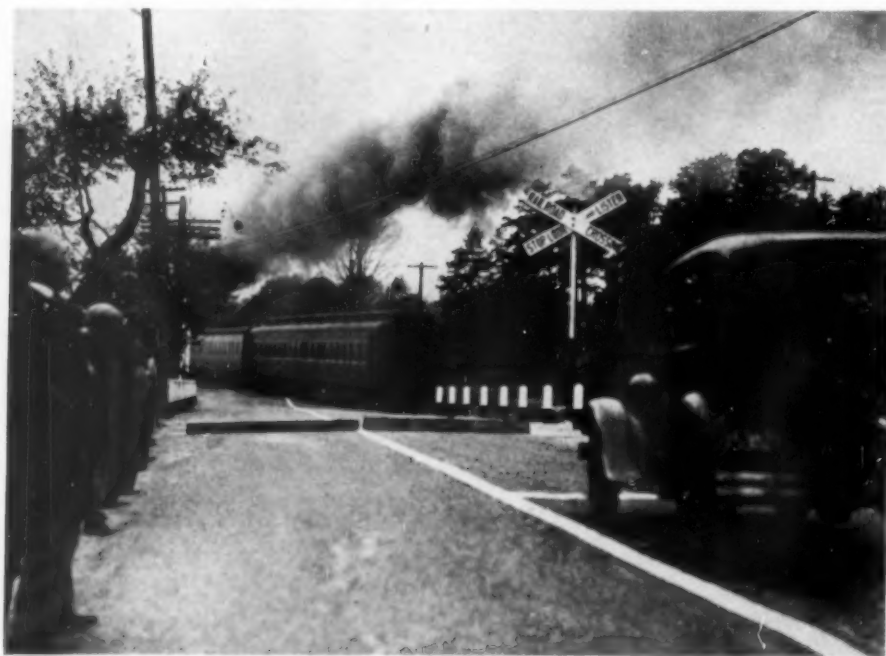
Deaths from grade crossing accidents reached the highest total in six years last year, when 3,792 grade crossing accidents, more than half of which occurred at night despite lighter traffic, took place.

Blame for the increase was placed on the fact that an automobile traveling at night at high speed cannot stop within the distance its headlights light up. In many cases, even if motorists see the warning gate, the car cannot be stopped in time.

Directional floodlighting of grade crossings and the sides of slow-moving freight trains has been successfully tried by a midwestern railroad. The crack Chicago and Northwestern "400" train between Chicago and Minneapolis has been equipped with a powerful beam that flashes its warning 2,000 feet ahead.

Train-actuated barriers that rise out of the road have also been tried, it is reported. One device works as follows:

Five seconds after the warning lights flash, the barriers rise to a warning height of four inches. Should a motorist be too near to stop in time he can still safely pass over the barrier, which can be depressed once. Two seconds later, however, the barrier rises to a height of nine and a half inches and locks in place. A vehicle hitting the barrier,



PROTECTION

Motorists who persist in racing against the locomotive engineer and the Grim Reaper may find this life-saving device protecting them in spite of themselves. A barrier that can stand an impact of 3,000,000 pounds rises out of the road. It is operated automatically.

which can stand a force of 3,000,000 pounds, is thrown upward so that any occupants are not hurt by the shock.

Carelessness is apparently still responsible for grade crossing accidents, study

reveals. A check of 3,569 drivers showed that while approaching grade crossings 2,907 failed to look in either direction, while 602 looked in only one direction.

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RADIOLOGY

Pneumonia May Be Caused By Sucking Oil Into Lungs

Physicians Warn Against Forcing Oil on Infants; Patients Wear Gas Masks; X-Rays Show Lead Poisoning

PNEUMONIA due to oily substances being drawn into the lungs is "not uncommon," Drs. Ralph S. Bromer and Irving J. Wolman of the University of Pennsylvania said at the Fifth International Congress of Radiology, Chicago.

Cod liver oil, mineral oil or liquid petrolatum, poppy seed oil, olive oil, sesame oil and even cream are among the oily substances which have caused the condition, known as lipoid pneumonia. The oil may get into the lungs from the nose, or from the throat if the child does not swallow properly, especially if he is resisting it. The mild vegetable oils caused the least reaction while cod liver oil, lard and other animal fats caused sudden, violent reaction in the lungs with bleeding and tissue destruction. Liquid petrolatum or mineral oil caused proliferative pneumonia.

Serial Pictures Needed

X-ray diagnosis can be made in severe cases, Drs. Bromer and Wolman found, but in moderate and mild cases serial X-ray pictures and an accurate history of the case are needed for positive diagnosis. The need for serial X-ray pictures was emphasized. In a series of 27 cases at the Children's Hospital, Philadelphia, 16 patients had had X-ray pictures made but the diagnosis of lipoid pneumonia was made in only one case. Twenty-two of the 27 died.

Infants and children who are small, weak, physically under par or suffering from nervous disorders seem particularly susceptible to the disease. It is not wise, the Philadelphia doctors warned, to give such a child liquid petrolatum as nose drops. Cod liver oil or mineral oil should never be forced.

Enlargement of the thymus gland in the chest, a dangerous condition found in some new-born babies, can apparently

be prevented to a large extent if the child's mother has sufficient iodine in her food and drinking water.

X-ray examination of the chests of nearly 1,500 infants, which suggest this conclusion, were reported by Drs. S. W. Donaldson and H. A. Towsley of Ann Arbor, Mich.

Because of the prevalence of goiter, a thyroid gland disease, in Michigan and other Great Lakes states and the relation of goiter to lack of iodine, the Michigan State Department of Health 13 years ago encouraged the use of iodized salt to make up for the deficiency of this essential element in the food and water of the state. At that time over a third of the school children had enlarged thyroid glands, a survey of 65,000 indicated. This has since dropped to less than one-tenth.

Before the introduction of iodized salt the babies were born with enlarged thymus glands, surveys indicated. In the series examined since 1930 by Drs. Donaldson and Towsley, less than one-fifth had enlarged thymuses.

Silicosis Diagnosis Unsound

X-ray diagnosis of silicosis is "not on a sound basis," Drs. A. E. Barclay, K. J. Franklin and R. S. Macbeth of Oxford, England, told members of the Congress.

They base this opinion on the fact that X-ray diagnosis of the disease which affects thousands of workers in the dusty trades depends on detecting fibrotic changes in the lungs. These changes, however, are not a disease form but the evidence of nature's attempt at healing.

Bearing out this opinion is the observation that the degree of fibrosis seen in X-ray pictures does not correspond with the condition of the patients.

"In extreme cases," the British scientist said, "we find men with marked

fibrotic lung changes who suffer little or no disability and are even sometimes quite fit for their strenuous work, while on the other hand we find men who are obviously completely incapacitated who show relatively little or even no definite fibrosis in the lungs and who cannot obtain compensation, for this depends on the roentgenological picture and not on the disability."

The irritating dust, usually silica, may not be the only factor in causing the disease, it was suggested. Anything that interferes with nature's mechanism for protecting the air passages from obstruction might pave the way for the deposition of the irritating silica dust. Studies of animals showed that the lungs of healthy animals can eject large quantities not only of inert dust but also dusts that are chemically comparable to those associated with silicosis. This action can be interfered with, however, and the results may be the retention of dusts in the lungs over a prolonged period.

Detect Metals in Poisoning

X-rays may prove useful in detecting small amounts of metals in the organs of the body in cases of poisoning, it appears from studies reported by Dr. L. Grebe of Bonn, Germany. The method would be equally useful in cases of poisoning due to industrial processes or in other types of poisoning.

Lead, mercury, gold, silver, copper, zinc, nickel and cobalt were among the metals which Dr. Grebe was able to detect by this method, which combines the X-ray and the spectograph.

He was able to detect the metals in the kidney, liver, heart, skin, muscle, intestinal wall, gall bladder, stomach wall, stomach contents, blood, spleen, spinal cord, brain, adrenal glands and uterus.

Patients Wear Gas Masks

Gas masks for patients during X-ray treatments will prevent radiation sickness in 98 out of every 100 cases, Drs. Harry F. Friedman and Phillip Drinker of Boston reported to the Fifth International Congress of Radiology.

Radiation sickness is a serious problem, often proving an obstacle to thorough treatment. The patient feels both sick and fatigued and may become anemic.

Breathing electrically charged air while X-rays are penetrating the body is what makes the patient sick, the Boston investigators found. The mask prevents this by de-ionizing the air or removing its electrical charge.

Various types of masks were used,

among them a hood of fine-mesh wire cloth. Simplest and cheapest arrangement, the investigators found, is a mask or respirator with rubber face piece and a charcoal cartridge to act as "ion trap." This was easy for the patients to wear and effective in 98 per cent. of the cases.

New, Mysterious Disease

The strange case of a man whose bones have turned pale red was reported by Dr. Eugene Freedman of Cleveland. No other case just like this one has ever been reported, Dr. Freedman said. He asked members of the Congress for help in discovering "the true nature of this man's disease."

The patient's bones show other changes besides that in color, and the bone marrow has been replaced by fibrous tissue. Hip bones, vertebrae and shoulder blades are affected. The condition has been going on for 12 years, starting when the patient was 16 years old. Although the disease has been progressing, the young man is not incapacitated by it. Dull, aching pains in the back and joints are the symptoms that have brought the patient into the hospital from time to time for treatment. Each time thorough study by X-ray, chemical and microscopic methods have been made, but the doctors still do not know the true nature of the disease or its cause.

More Broken Necks

More people are getting their necks broken these days than in the horse and buggy era, and the automobile is responsible, Dr. H. F. Plaut of Cincinnati told members of the Congress.

The particular part of the neck which gets broken is the atlas, the first vertebra at the base of the skull which forms the pivot on which the skull rotates.

"Previously fractures of the atlas were reported among longshoremen and in gymnasium accidents," Dr. Plaut recalled. "Now automobile accidents throw riders against the tops of cars and pitch them to the pavement with many cases of fractured atlases."

Most of these patients recover and are fully active, Dr. Plaut said. Fractures of the skull above the atlas are more dangerous.

The atlas is not easily injured by direct violence because it is well protected by other bones and is deeply imbedded in surrounding soft tissues. But in a head-on fall the force is directed against the weakest part of the atlas by the pressure of the skull at this point.

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PHYSICS

Radioactive Sodium Isotope Giving Off Positrons Found

DISCOVERY of a long-lived radioactive isotope of sodium, whose atoms are similar to the ordinary variety of the metal but have a slightly different weight and are radioactive, is reported by Prof. L. Jackson Laslett of the University of California. (*Physical Review*.)

This new discovery is not to be confused with artificially radioactive sodium itself, discovered three years ago by Prof. E. O. Lawrence of the same University. Prof. Lawrence's discovery is believed to be of medical value because it is a cheaper source of gamma rays, useful in treating cancer, than radium and because sodium is a constituent of salt, which can readily be injected into the body.

Positrons, like the more familiar electrons in mass but with the opposite kind of electric charge, are emitted by the metal whose atomic weight is 22. It has an unusually long life for an arti-

ficially radioactive material, it is reported, the period during which half of it will be decomposed being about three years.

Heavy hydrogen atoms, speeded up by means of the Berkeley institution's famous cyclotron, were hurled at a magnesium target to produce the sodium isotope. Seven months of observation and testing determined the "half-life" period of the element. Positrons are one of the newly-discovered "building blocks" of the atom and have not been frequently observed as a part of radioactive radiation.

At the same time, Dr. Harold Walke of the University of California reported discovery of an additional radioactive isotope of potassium. The new member of the potassium family has an atomic weight of 42. Other radioactive potassium isotopes have enabled scientists to calculate the age of the earth.

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CHEMISTRY

Scientists to Honor "Father of Modern Industrial Chemistry"

NATIONAL science organizations will join in a month-long series of events in New York City from Oct. 6 to Nov. 4 to celebrate the 100th anniversary of the birth of Dr. Charles Frederick Chandler, "father of modern industrial chemistry."

Dr. Chandler, a founder of the Columbia School of Mines in 1864 and of the American Chemical Society, one of the United States' premier scientific societies, will be honored in three Chandler Memorial Lectures, at presentation of the highly prized Chandler Medal to Dr. John H. Northrop of the Rockefeller Institute, by an exhibition of Chandleriana and at a Centennial Banquet on Nov. 4, Prof. J. Enrique Zanetti of Columbia University, chairman of the Centenary Committee, announced.

Thomas Midgley, Jr., vice-president of the Ethyl Gasoline Corporation and pioneer chemist in the field of anti-knock engine fuels, will deliver the first

Chandler Lecture at Columbia's McMillin Academic Theater on Oct. 6. Dean William de B. MacNider of the University of North Carolina Medical School will discuss chemical discoveries and their application to the chemistry of cells at the second Chandler lecture on Oct. 13.

A week later, Dr. Haven Emerson of the Institute of Public Health in Columbia's Medical School will speak on the late Dr. Chandler, "New York's First Public Health Chemist."

More than 20,000 former students of Dr. Chandler will join in doing him honor. Numbered among the 20,000 are many of the leading American chemists today.

Public health was the field in which Dr. Chandler achieved his greatest fame, but his work reached into almost every chemical industry in the United States during the decades following the Civil War.

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ASTRONOMY

Star Whirls Hitherto Unknown Discovered in the Milky Way

Giant Cluster Which Revolves About Still Larger Group Provides Evidence of Gravity Connection

IMPORTANT new clues to the structure of the Milky Way have been found at the Harvard Observatory where officials announced discovery of a new type of astronomical sub-system in the universe.

The new system consists of a giant cluster of some hundreds of stars which revolves about a still larger cluster, much as the earth travels about the sun. Astronomers say it presents the first positive indication they have had that these tremendous clusters may be connected with one another by gravity to form independent sub-orders within the galaxy.

The discovery, made by James Cuffey of the Harvard Observatory staff, was the result of numerous extremely accurate computations of the distances from

the sun of nine galactic star clusters in the constellation Auriga, the most comprehensive and exact measurements of these distances ever made.

The two clusters the research showed to be companions are those known as Messier 38, which has a mass about 500 times that of our sun, and NGC 1907, which is about 75 times the mass of the sun. The smaller one, it was found, revolves about the larger cluster with the time required for one complete revolution estimated to be about 60,000,000 years.

A painstaking study of the colors of nine such groups in Auriga led to the conclusion that these two clusters constitute a system. The colors of stars in clusters are used by astronomers to determine their distances and Messier 38

and NGC 1907 were found to have very similar characteristics. Thus they were shown to be about the same distance from the sun, approximately 28,000 light years. In space they are only 24 light years apart.

A third and still larger cluster, Messier 36, is also believed to be physically connected with the other two groups for it too is about 28,000 light years from the sun. It is about 150 light years from the first two.

Mr. Cuffey doubts, however, that there is any possibility of a second rotation, of the pair around Messier 36 as a common center of gravity, for dynamical reasons. Four other clusters in Auriga which Mr. Cuffey studied appear close together when viewed from the earth but are merely an optical group rather than a physically connected system, he has decided. Two of them are at an equal distance from the sun but another is more than four times as far while the last is hardly half as distant.

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PHYSICS

Rays Smash Into Atmosphere With Ten Billion Volts

COSMIC ray particles reach the earth's atmosphere with the immense voltage of ten billion (10,000,000,000), Dr. Bruno Rossi of Padova, Italy, reported to the Fifth International Congress of Radiology, at Chicago.

To medical and other scientists who have recently spent a week in discussing how X-rays and radium can detect and cure disease, Dr. Rossi brought the latest results of researches upon the penetrating radiation from outer space that man has not yet been able to use practically.

Whereas a million or two is about the peak voltage practically used in connection with X-rays and neutrons in medical treatment or research, Dr. Rossi told the congress that a greater part of the primary cosmic radiation is composed of electrified particles and that most of the particles observed reach the earth's atmosphere "with an energy greater than 10,000,000,000 volts."

Dr. Rossi traveled to the Italian colony of Eritrea on the Red Sea to make some of his cosmic ray observations. He is a member of the Italian research team of Fermi and Rossi, which demonstrated the existence of chemical elements beyond number 92, which has long been considered the heaviest possible.

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LISTENING FOR SYMPTOMS

The stethoscope is used to listen for signs of old age in motors as well as in men. Here it is helping a Graham-Paige Motors Company engineer to test a supercharger which has lived through 100,000-mile run on the test block.

CHEMISTRY

Shanghai Fighting Disrupts Exports of Tung Oil

FIGHTING in Shanghai, disrupting the normal life of the port, has already seriously interfered with the export of tung oil, an essential ingredient of paint, varnish, linoleum, printer's ink, and a number of other important commodities. Dispatches received at the U. S. Department of Commerce indicate that of the 8,000 tons of tung oil on hand when the trouble commenced, only 1,000 tons could be shipped during August.

The great center for tung oil shipment is Hankow, far up the Yangtse river. The oil is normally sent down river to Shanghai for transshipment to ocean-going ships. There is a railway line running from Hankow southward to Canton, which offers an alternative route for export, but of course, the necessary re-routing of the shipments has not yet gone into effect.

If either side in the present undeclared war succeeds in gaining undisputed possession of Shanghai, commerce will presumably resume normal flow in relatively short order. On the other hand, if Japan drives a thrust toward Hankow, the tung oil trade may be destroyed at its very center.

In the meantime, there are reserve stocks of tung oil in this country estimated to be sufficient to supply all needs until about the end of 1937. Domestic production, in the Gulf states, has been increasing rapidly during the past few years, but is still able to take care of only a small fraction of the total demand.

Science News Letter, October 2, 1937

MEDICINE

Warns of Possible Danger In Use of Sulfanilamide

MEDICINE'S spectacular new weapon against a host of infections, the drug sulfanilamide—also known as prontosil and prontosil—is gradually revealing itself as having occasional toxic by-effects.

From far and near warnings of the possible toxic reactions to this new agent come filtering in to the American Medical Association.

In its *Journal*, (Sept. 25), the Medical Association gives space to eight articles that cite untoward reactions in certain patients following the use of the drug.

Sulfanilamide sprang into front page

eminence last winter when, according to reports, it was used for the septic sore throat of Franklin D. Roosevelt, Jr.

Extraordinary benefits have since been reported through the use of this drug in other streptococci infections and also in meningococci, pneumococci and gonococci infections.

From Milwaukee comes the report of a case of acute hemolytic anemia during treatment with sulfanilamide.

Chicago produces a case of severe loss of vision resulting from toxic optic neuritis after treatment with the new drug.

New Orleans reports four cases of skin eruptions among patients receiving the drug. Baltimore adds two similar cases.

Cleveland reports severe allergic manifestations in two patients. Four cases of a peculiar skin eruption have occurred in New York City when patients taking the new agent sat in the direct sunlight.

Los Angeles reports one patient with an untoward skin reaction. Sioux City, Iowa, has a similar story to tell.

Atlanta, Ga., has nothing negative to report. On the contrary it tells of the successful use of artificial fever in combination with sulfanilamide in treating gonococci infection.

The reports are not presented to detract from the value of the new drug but to warn physicians that care must be taken in its use. Most of the physicians reporting think it possible that the skin eruptions represent an allergic cutaneous reaction to the drug.

Science News Letter, October 2, 1937

SEISMOLOGY

Severe Earthquake Occurs on Equator

FAR OUT in the Pacific, about 450 miles northeast of New Guinea, a severe earthquake occurred a few minutes after eight o'clock on the morning of Thursday, Sept. 23. Tentative determination of its position was made by the U. S. Coast and Geodetic Survey, after examination of data gathered telegraphically by Science Service.

Exact time of origin was 8:05.9 a. m., eastern standard time. Approximate position of epicenter was on the Equator, at longitude 150 degrees east. Seismological observatories reporting were: Dominion Meteorological Observatory, Victoria, B. C., the University of California, Berkeley, Calif., the stations of the U. S. Coast and Geodetic Survey at San Juan, P. R., and Ukiah, Calif., and the Franklin Institute, Philadelphia, Pa.

Science News Letter, October 2, 1937

IN SCIENCE

ARCHAEOLOGY

Dig in Cave Floors, Find Prehistoric Apartment Life

CAVE floors, containing no less than three layers of Indian remains, have been excavated near Billings, Mont., by Prof. H. Melville Sayre, president of the Montana Society of Natural History.

The finds, which reveal Indian cave tenants of prehistoric days, take on additional importance, since Montana has been little explored archaeologically.

In the first level, Prof. Sayre found Indian beds of grass, leaves, vines, and sagebrush. Other levels contained fireplaces, household utensils of bone and stone, bones of animals, buckskin thongs braided with fiber, and shells from the Pacific coast.

Fragments of hematite, source of red paint, indicate that braves of these cavern apartments probably wore startling war paint or ceremonial decorations, even as later Indians did.

Science News Letter, October 2, 1937

VITAL STATISTICS

Automobiles Grave Risk For Aged Pedestrians

GRANDMOTHER and grandfather, each time they step across the street, are taking much greater chances of fatal injury than do Junior and his sister who frequently spend whole afternoons dodging automobiles in the street.

One hundred and three men in every 100,000 over 65 years of age were killed in automobile accidents last year. Thirty-four of every 100,000 women over 65 were injured fatally in automobile mishaps. This figure is contrasted with a 17 per 100,000 death rate for boys between 1 and 14 years of age and 8 per 100,000 for girls of the same age.

Slowing down of mental processes and reaction time with increasing age was blamed by Metropolitan Life Insurance Company experts who compiled the figures for the high mortality rates. The rate is higher than that for men and women between 15 and 64 years.

Two-thirds of the accidents involving old people happened to pedestrians, it was pointed out.

Science News Letter, October 2, 1937

THE FIELDS

AVIATION

Airplanes Used to Freight Supplies for Climbers

AIRPLANES dropping food and supplies replaced the long string of laboring porters during the conquest of Lenin Peak, in the Pamir Range of Asia, whose 23,700-foot peak was recently scaled by a party of eight Soviet alpinists. Starting from the town of Osh, Kirghizia, in June, the mountaineers reached the summit on Aug. 17.

Radio equipment kept the climbers in constant communication with their base camp, and hundreds of pounds of food-stuffs and equipment were dropped to them in freight parachutes, eliminating the usual man-killing task of back-packing supplies up the mountains, where, at the summit, the concentration of oxygen is only two-fifths as great as at sea level.

By means of portable radios, the climbers received daily weather reports from the Weather Bureau station at Tashkent. One set was carried to the summit by the alpinists.

The Pamir Range is one of the least known of the great mountain ranges of the world, and one of the "last frontiers" for the alpinist.

Science News Letter, October 2, 1937

ENTOMOLOGY

Bees' Language Discovered; Its' Strange Sort of Dance

BEES HAVE a language of scented dancing. By means of it a scout bee that has made a rich discovery can send his fellow workers out after honey with almost as much dispatch as police are rushed to points of need by radio calls.

Scientists used to think that bees located flowers by color or scent. This is partially true. But in an exhaustive study of the bee habits, Prof. K. Von Frisch of Munich found that bees communicate with one another by a strange sort of dance performed within the hive. In this way they tell where honey can be obtained most easily.

Often it will take hours and sometimes days for a good feeding-place to be discovered. But when one bee has

found the honey, many, perhaps several hundred, will appear in a very short time. And they all come from the same hive as the discoverer.

Prof. Von Frisch set out to discover the language or mode of communication of the bees.

Here's what he found: If a new kind of flower begins to bloom, it is discovered by a scout bee. He loads up with honey and flies home. In the hive he reports the discovery by a queer sort of dance, turning round and round in a circle with queer tripping little steps, once to the right, once to the left, very vigorously, often for a minute on the same spot. Other bees crowd around with high interest. They rush out of the hive and soon can be found at the honey source.

The dance is a signal that honey has been found. The bee carries upon him the scent of the flower containing the nectar. The other bees noting this odor search for it as they fly out of the hive in all directions. Moreover, the discovering bee returns to the good honey source and broadcasts another odor created by a scent organ on its abdomen that also guides the other workers.

Science News Letter, October 2, 1937

VITAL STATISTICS

Foreign-Born Urban Males Live Longer Than Natives

THE MASCULINE foreign-born city dweller is apparently a tougher hombre than his native-born male neighbor.

At least, figures reported by the Metropolitan Life Insurance Company statisticians indicate that he can expect to live longer.

His advantage in cities of 10,000 population or more is nearly four months throughout most of his life. At 30 years of age the immigrant boy still has 36.18 years of life ahead of him, while the native male can look forward to 35.81 years. As both grow older the advantage becomes less, but even at 90 the immigrant has .14 year more of life to anticipate than the American-born male of the same age.

But his advantage is lost when both go out to the country-side, where the native male lives longer than the foreign-born one. Foreign-born country dwellers live longer than their city brethren, while native-born rural inhabitants also outlast city natives. Native females also have an advantage over their foreign-born neighbors.

Science News Letter, October 2, 1937

MEDICINE

Cancer Cells Present In Everyone's Body

EVERYONE has some cancer cells in his body, in the opinion of Dr. Albert Fischer of the Carlsberg Foundation, Copenhagen. (*American Journal of Cancer*, September)

Cancer cells are a "variety of the normal average tissue cell," Dr. Fischer believes, as a result of his researches. These cancer cells are present in every tissue and organ of everyone's body. The reason everyone does not have cancer in consequence of having cancer cells in his body is that there is an extremely small number of them, and because they die easily, they do not have much chance of multiplying and forming a sufficiently large colony.

"Old age, chronic proliferative activity, infectious diseases and viruses" are the "realization factors" which are all that are needed, Dr. Fischer says, for the development of the ever-present cancer cells into a malignant tumor.

Science News Letter, October 2, 1937

ENGINEERING

Make Tiny Ball Bearings, Size of a Pin Head

TINY, precision ball bearings are now being manufactured in Switzerland. In overall size, including the ball race, they are no larger than the head of a pin. They can be substituted for jewel and plain bearings in all forms of clockwork, motors, and delicate machines.

They are particularly useful for aviation instruments because they can withstand shock and vibration better than jewel bearings. Tests on the reduction of friction obtained have been made for comparison with jewel and plain bearings. The mean damping time for rotational motion in identical conditions was eight times longer than for plain bearings and 20 times longer than for tapered pivots. The ball bearings have an extremely low coefficient of friction so that only approximately the same force is required for starting as for running.

The smallest ball bearings now available (1.5 millimeter diameter) have three balls and the larger ones have eight. It is claimed they operate satisfactorily up to 10,000 revolutions a minute. Only 15 per cent. as much oil is needed for lubrication as is required for plain bearings, so that they do not need lubrication for years in a small unit.

Science News Letter, October 2, 1937

VOLCANOLOGY

Volcanic Eruptions Predicted

Even This Awesome Natural Phenomenon Can be Forecast And Its Heat And Lava Put to the Service of Man

By RONALD L. IVES

See Front Cover

WHERE will the next great volcanic eruption occur, and when?

Will the older, semi-dormant volcanos burst forth into new activity or will the well-known active volcanos supply us with our next display of terrestrial pyrotechnics?

Will the new volcano which destroyed Rabaul, in New Guinea, recently, continue to erupt, or will it sink back into the sea and be heard of no more?

How can we tell?

Scientists have been studying the activities of nearly all the known volcanos, and from these studies can sometimes predict with some accuracy the approximate time of an eruption.

Fragmentary accounts of the eruption at Rabaul, New Guinea, tell us graphically of the danger and terror accompanying the eruptions of Matupi and Vulcan volcanos, in Rabaul harbor. On May 29 of this year, shortly after 4 P. M., Vulcan blew up. There were landslides and a mild earthquake, and in the words of witnesses, the sea seemed to draw away from the shore as if fearing the wrath of Pele, the volcano goddess.

Great crevasses opened on Matupi early that morning. Then came the black clouds and the explosion on Vulcan. Smoke and pumice, carrying along plumes of steam, blanketed everything. The Matupi volcano also poured out molten earth. The night was terrible, with rain deluging everything.

Rescue

Capt. Eugene Olson of the Golden Bear pulled up anchor from Blanche Bay at New Britain proper and struck out for the islands whose doom had been proclaimed as far as the eye could see. The passage into the open Pacific required that he steer his course between Vulcan and Matupi, and he drove between this modern Scylla and Charybdis over water thick with floating pumice and silt.

The Golden Bear picked up the first refugees from Nordrup Beach where they were gathering. Amid terrific heat

and humidity, over roads blocked with deposits of dust and fallen trees, 8,000 people fled to the Beach and were taken off by the Golden Bear and numerous small craft on that "Black Saturday."

Sunday brought new horror with a fresh eruption of Matupi. The Golden Bear, with the Montoro, a freighter which had been recalled from a voyage, carried off 1,000 persons. The surrounding sea area within 100 miles of Rabaul was covered with volcanic dust. Latest estimates of the loss of life, 261 natives and two Europeans, seems incredibly low in view of the monstrous demonstration of Nature in one of her angriest moods.

Dr. T. A. Jaggar, who has lived for many years on the summit of Kilauea in Hawaii, has been able to predict, as a result of his long study, many of the eruptions of Kilauea and its neighbors. Dr. E. G. Zies, of the Geophysical Laboratory of the Carnegie Institution of Washington, has been studying the volcanos of Guatemala for many years, and from these and other studies a similarity between the volcanos of Guatemala and Java have been found.

Warning Earthquakes

Earthquakes of increasing frequency and violence are well-known precursors of eruptions in volcanic regions. These warnings were first noted by Pliny, in his description of the eruption of Vesuvius, which destroyed Pompeii and Herculaneum in the year 79 A. D. Today, studies of earthquakes in known volcanic regions are being made in an effort to predict eruptions. Perhaps the next great eruption will take place in the West Indies, where a series of tremors have been observed on and near the island of Montserrat for some time. Will Montserrat be the site of a great cataclysm in the near future, such as occurred at Mont Pelee in 1902? Time alone will tell, but modern knowledge of volcanology will do much to protect the human population of this fertile and unstable area.

The United States, at the present time, is one of the few large countries that has little to fear from volcanic activity. Mount Lassen, in California, is our only active volcano, and its activity is slight.

In the not-very-remote past, however, there were many active volcanos in the United States. Only about 1,000 years ago, eruptions occurred in the southwest, and greatly influenced the life of the cliff-dwellers there. Layers of volcanic ash are found in many of the ruined cliff houses, and several tribes have legends of fires on the mountains.

Many in Mexico

Mexico, our southern neighbor, has many volcanos, some of them intermittently active. Pinacate Volcano, in northern Sonora, just south of the international boundary, was the site of an explosive eruption in 1935, which was preceded by violent earthquakes. The last eruption there, prior to 1935, was so ancient that it is known only in Indian legends, but the legends are easily verifiable by geologic evidence. Before the coming of the Indians, this volcano poured out 1500 square miles of lava onto the desert, and then blasted a number of great craters, some of them 4,000 feet across and 700 feet deep, through the lava.

Not so long ago, geologically speaking, the Columbia River plateau was the scene of enormous outpourings of lava, and the activity continued until after the coming of the Indians. Today, atop the 1500-foot-thick flows of lava, fumaroles surrounded by charred sagebrush have been discovered.

In the great park region of Colorado, just west of the Front Range, numerous recently-extinct craters have been discovered, and in the area from the east side of the Rocky Mountains to the California Coast Range, north to the Canadian Border, and south to Mexico, extinct volcanos, hot springs, and great lava flows are numerous. Yellowstone Park, famed for its geysers and hot springs, is only one of many areas where volcanic activity took place within the last few million years. Here, buried lava flows supply the heat which warms the springs and operates the many geysers.

Alaska and the Aleutian Peninsula are noted for their volcanos. Perhaps the best known eruption in this area was that of Katmai, which in 1912 exploded with terrific violence, lowering the peak, spreading a thick layer of volcanic ash over the surrounding country, and creating the famous "Valley of Ten Thousand Smokes," which is now a National

Park. Many new volcanos have been discovered on the Alaskan coast in recent years, and at frequent intervals new volcanos rise from the sea in the Aleutian area, creating new islands.

Krakatau, whose eruption was the greatest in history, was once a small circular island, the eroded remnant of a great prehistoric volcano. After a few months of rather mild and unrecognized premonitory phenomena, it exploded violently in 1883, destroying most of the old crater, and throwing four and a half cubic miles of dust into the air. The blasts were heard nearly 5,000 miles away, and for several years afterwards sunsets all over the world were reddened by the dust suspended in the air. Recently there has been renewed activity in the old crater of Krakatau, now a hollow in the sea floor.

Geologists have found that volcanos are most common in certain definite areas, generally near the sea, and less frequently near great mountain ranges. In these areas, there are great inequalities of pressure, and often zones of ruptured or strained rock, called faults.

Relief Through Faults

Earthquakes are relatively common here, as a result of these strains. Under present theories, these faults allow the escape of heated and compressed material from deep in the crust of the earth, and when the unequal stresses have been relieved, the eruptions stop. These faults are not, as was once believed, open cracks leading down into the molten interior of the earth. Under present theories, the source of lavas is in pockets of molten material relatively near the surface of the earth.

Earthquakes, under this theory, are minor slips of the upper layers of the earth's crust, which wholly or partially relieve the crustal stresses. When the stresses are relieved, the quakes stop until more stresses are built up.

If a pocket of molten material is cut by a fault, and the pressure is sufficient, a volcano may be created along or near the fault plane, and eruptions will continue at this vent until pressures are relieved. When new pressures are built up, additional eruptions from the same vent, or from adjacent vents, may occur.

While earthquakes almost invariably accompany volcanic action, earthquakes often also occur when no pocket of molten material is disturbed, and in this rather common case no volcanic phenomena accompany the quakes.

At times, when the outlet from a pocket of molten material is small, the lava will harden in it before pressure is



AMERICA'S ACTIVE VOLCANO

Mt. Lassen in a placid mood.

relieved, and action will be temporarily stopped. At some later time, when accumulated pressure is great enough to push out the obstruction or make a new vent, another eruption occurs. From this, it has been roughly determined that volcanos in relatively continuous activity seldom have violent eruptions, while those in intermittent activity act with greater violence.

Volcanos, at the beginning of their life, are often small vents in the ground, surrounded by the debris thrown out onto the adjacent land. After some time, the debris piles up around the vent, and a cone is built, which grows in height and circumference as material from within is poured and thrown upon it.

Thus, by studying the layers of material on the slopes of a cone, volcanologists may determine the probable past history of a given volcano, and in a few cases, as at the Pedregal, in Mexico,

roughly date the eruptions by the age of the human culture buried by the lava flows. Another example of this dating is in California where eruptions are approximately dated by a study of the rings in the trees killed by the lava flows and ash falls.

While lava flows and ash falls are the best known volcanic phenomena, many others accompany a volcanic eruption. Great flashes of lightning have been observed on the peaks of erupting volcanos, violent rainstorms, which cause mud flows down the cones as the water floats away the newly-fallen volcanic ash, clouds of noxious and superheated vapor, and small tornados have also been noted as accompanying eruptions. Noises are always present during an eruption, and the loud blasts that follow explosive eruptions are frequently heard for distances of hundreds of miles.

Direct damage to human life and

property is done by lava flows, dust falls, and gas clouds, the toll frequently being measured in hundreds of lives and millions of dollars. The indirect damage to man is perhaps even greater.

Volcanic dust hangs in the air for months, and sometimes for years, reddening the sky, and upsetting normal precipitation. It has been suggested by many workers that a series of eruptions in relatively rapid succession might easily mask out enough of the essential ultraviolet radiation from the sun to definitely harm life on the earth, causing decreased growth in plants, and rickets in animals.

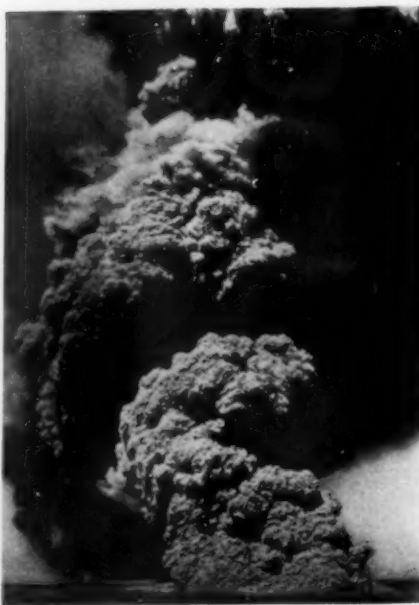
Further, the lesser radiation received by the earth would result in a decreased temperature, and perhaps, in an extreme case, in another ice age. Can we, then, assume that our recent ice ages, the last of which ended only about 20,000 years ago, were caused by great volcanic activity? We know that during the time of the ice ages (Pleistocene) many volcanos were active. Climatologists will not state definitely that this is so, and there are other factors to be considered, but volcanic dust may well have been one of several factors influencing the formation of the great Pleistocene ice sheets.

Volcanos, however, are sometimes beneficial to man. The slopes of Vesuvius and other volcanos are extremely fertile, and men occupy and farm these slopes despite the known danger from eruptions. Prior to most of its eruptions vineyards were planted on its slopes, and even when the danger of eruption was imminent, the farmers stayed on the slopes to harvest their crops, often losing their lives in doing it.

Fertile Soil

In Hawaii, Java, and other volcanic regions, the fertility of the volcanic soil likewise attracts farmers, in spite of the danger of the location. Some of the early Indian agriculturists of the Southwest probably benefitted from the fertility added to their fields by falls of volcanic ash, and their cultures may have declined more rapidly because of the exhaustion of the minerals in this newly-added soil.

Recently, in Italy and in California, attempts have been made to harness the heat of volcanos, with some success, and for many years, the hot springs of Iceland have been used as sources not only of hot water but of heat. While the problem of volcanic power is by no means solved, recent developments in corrosion-resistant pipe and deep drilling methods are of great assistance in har-



DUST

This is what pours from the mouth of an active volcano to redden the sunsets for many nights to come.

nessing this underground power. Perhaps, as our supplies of coal and oil become exhausted, and our water power is used up to its limit, we will turn to volcanic power, and build on this a new series of power-consuming industries.

Much has been learned in recent years about the whys and wherefores of volcanos, and much more has been suspected but not proven. Not many years ago, volcanos were regarded as supernatural things—the workshops of the fire gods, or as “chimneys to Hell,” or even as leaks in the earth’s crust, allowing the molten interior of the earth to escape. While we still have much to learn about them, we now know that they are natural phenomena, having their sources of heat relatively near the earth’s surface, and that volcanos, instead of being sources of great danger, are more nearly like great terrestrial safety valves, which keep pressure from accumulating under the surface, and by erupting prevent more violent and devastating explosions.

Today, although our modern civilization is more easily damaged than ever before in history, and although we have no means of preventing eruptions, damage to man from volcanic action is less to be feared than ever before in the past, for we have rough methods of predicting activity of a volcano; we are able, in some cases, to dam up or divert lava flows, our modern methods of transportation permit rapid evacuation of a

threatened area, and this same rapid transportation enables relief to be rushed to the stricken areas. Perhaps, in the not too distant future, we will be able to divert not only lava flows, but the eruptions themselves, from areas of great economic importance into nearby areas of lesser value.

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Science News Letter, October 2, 1937

ARCHAEOLOGY

Mysterious Cave Men Inhabited Utah Caves

NEW and mysterious cave men must be added to the story of ancient America, explorations in Utah reveal.

Excavating floors of caves in Utah's Salt Lake region, Dr. Julian H. Steward of the Smithsonian Institution has discovered traces of human life entirely different from the Pueblo Indians, or the older Basket Maker Indians, or the old, old Folsom bison hunters, who represent the main stream of ancient history in our Southwest. The expedition, the report of which Dr. Steward has just published, was financed jointly by the Smithsonian and the University of Utah.

Salt Lake cave dwellers, thus suddenly thrust into the limelight, go back at their earliest to 10,000 or even 15,000 years ago, Dr. Steward estimates from geology of the region. Black Rock Cave, scene of some of the discoveries, became dry and habitable about that time when old Lake Bonneville was receding, and the evidence is that early hunters lost little time moving in.

A baby found buried in the floor of the Black Rock Cave was one of its earliest occupants. With the child, Dr. Steward found only a dagger-like article of bone. Hunting weapons of men of this era were also unearthed, and the archaeologist reports that these small dart or arrow points do not offer any evidence that these Utah cave dwellers were related to the Folsom bison hunters, though they may have been contemporaries in the Southwest.

So new are the Salt Lake aborigines to science that even the successive occupants of two caves cannot be fitted in to their relationships one with another.

The latest inhabitants, who lived in the region about 1000 A.D., after Pueblo Indians had vanished from northern Utah, have left numerous clues to their way of living. Dr. Steward suggests calling these Indians the Promontory people, from a cave at Promontory

Point, where they first came to light.

Features of their unusual culture include: a unique type of crude black pottery, decorated by the thumbnails of the potters; soft-soled moccasins resembling baby booties, and mittens with the thumb ingeniously tailored, both of which, Dr. Steward believes, were borrowed or inherited through some relationship with far northern hunting tribes; a variety of gaming devices, in-

cluding flat bones, cane gambling pieces, a netted hoop and dart game, and an ornamented beaver tooth rather similar to those used as dice by northwest coast tribes.

Promontory people of Utah were economical, Dr. Steward's findings show, for out of 248 moccasins found in one cave, all but 58 had been repaired with half soles, patches, and even patches on patches.

Science News Letter, October 2, 1937

PUBLIC HEALTH

Infantile Paralysis Wave Has Reached Its Peak

EIGHT hundred and seventy-nine new cases of infantile paralysis were reported to the United States Public Health Service during the week ending Saturday, Sept. 18. The total constituted a small increase over figures for the previous week, when 817 poliomyelitis sufferers were reported.

The peak of this year's wave of the dread disease has probably been reached, the Public Health Service officials believe. Otherwise the health of the American nation is in good shape.

Illinois, where the number of new cases dropped from 130 to 81 during one week, relinquished first place in the list of states visited by infantile paralysis to New York, where 91 new cases were again reported. Minnesota with 52, Ohio with 59, Michigan with 57, Wisconsin with 45, Connecticut with 41, California with 46 and Pennsylvania with 40 cases were the states from which the most serious trouble was reported.

Behavior of the epidemic each fall during the last nine years led the Public Health Service to believe that this year's outbreak has already reached its most menacing proportions and is due to recede. Infantile usually drops sharply with the approach of brisk weather. No predictions with regard to individual states, because of the lack of adequate past figures, were made.

Texas with 33 new cases against 21 the week before was one state to report a marked increase. Up to September 18, 6,319 cases had been reported this year as compared with 2,261 during the same period last year. But the figures are still far below the proportions of the 1931 epidemic.

Cholera Spread Watched

Public health officials are not worried about the possibility of a spread of cholera from war-torn China to the United States, but are nevertheless keeping a weather eye peeled in the direction of Hong Kong. Dr. Robert Oleson stated. The short incubation period, five days, makes it impossible for anyone, even though coming by transpacific airplane, to enter the United States before showing symptoms of the disease if contracted in the Orient.

Science News Letter, October 2, 1937

A famous Arizona copper mine has installed air conditioning, and for the first time in its history, it did not lay off its workers in mid-summer.

MEDICINE

Nose and Throat Specialists Told How to Use Polio Spray

Zinc Sulphate Used to Blockade the Nerves of Smell Recommended By Organization of Physicians To Members

EYE, ear, nose and throat specialists throughout the nation now have information on how to apply the new protective nose spray against infantile paralysis.

An "emergency communication" has been rushed into the mails by Dr. William P. Wherry, executive secretary-treasurer of the American Academy of Ophthalmology and Otolaryngology, to all members of that professional organization in order that they may be equipped to treat protectively children and others in the epidemic areas.

Zinc sulphate is the chemical used to blockade the nerves of smell in the upper part of the nose and thus close the road of the virus to the nervous system and brain.

Special Instrument

The specialists are warned that an ordinary atomizer such as used for spraying the nose does not reach the olfactory area. It is recommended that the one per cent. zinc sulphate solution with 1/2 per cent of saline, be sprayed on both sides of the nose by use of a long metal tip (De Vilbiss No. 156) which has been inserted between the middle turbinate and septum. The mucous membrane is shrunk with benzedrine inhalant or aqueous ephedrine solution.

Recognizing that this protective treatment may cause rather severe headaches, particularly in the case of adults, one per cent. of pontocaine, a local anesthetic, is added to the solution.

The treatment is given on two consecutive days and then repeated once

every two weeks until the epidemic subsides.

For little children who can not be treated successfully with the spray, dropping the solution into the nose with the patient lying on his back with head dropped back over the edge of a couch is recommended, although this method is likely to be less positive than the spraying properly done.

Reports Requested

Physicians are being asked to send in detailed reports to Dr. Wherry giving their experiences in handling the treatment. The treatments must be given by physicians.

The zinc sulphate protective treatment was worked out by Dr. E. W. Schultz of Stanford University after Drs. Charles Armstrong and W. T. Harrison of the U. S. Public Health Service had discovered and announced that the infantile paralysis virus, entering the spinal cord and brain by way of the nerves of smell, could be blocked by chemical spraying. Dr. Schultz independently and simultaneously made the same discovery. First alum or tannic acid, then picric acid, and then zinc sulphate were used as the protecting chemical.

Science News Letter, October 2, 1937

An arm of the sea once cut North America in half from the Gulf of Mexico up to the Arctic Ocean.

Government scientists have tried out 13 crosses of standard breeds of chickens, and have found two hybrids that look valuable.

MEDICINE

New Type Industrial Injury Caused By Diesel Engines

Fuel Oil Escaping Under High Pressure May Penetrate Skin and Result in Gangrene Following an Accident

AN entirely new type of industrial injury may be charged against certain types of Diesel engines. The danger is due to the very high cylinder pressures at which Diesel engines operate.

A California motor mechanic has recently had to have one finger amputated following an accident in which fuel oil escaping under high pressure penetrated the skin and led to dry gangrene.

The *Journal of the American Medical Association* (Sept. 11) tells of the industrial hazards caused by the introduction of high pressures in industry. The severity of these accidents is dependent upon the character and quantity of oil and upon the pressure under which it is introduced into the tissues, states Dr. C. E. Rees of San Diego.

The case Dr. Rees reports is that of a mechanic who was testing the jet of a Diesel engine. He was holding the jet, which he had removed from the cylinder head, about one inch from the tip of his right middle finger when he tripped the valve. Oil was forced from the jet into his finger at a pressure estimated to be about 4,000 pounds.

Intense pain, high temperature, hospitalization, gangrene, amputation—these were the aftermath of the accident. It was eight weeks before the hand healed.

Diesel engines differ in principle from gasoline engines in that the fuel in the

explosion chamber is ignited not by an electrical spark but by heat generated from compression of the mixture of fuel and air.

The fuel is supplied directly into the cylinder of the engine, where it is mixed with air, compressed and fired.

In one type of Diesel engine which uses the heavier fuels the oil is forced into the cylinders through a jet, where it is fragmented by air under very heavy pressure—from 1,200 to 5,000 pounds per square inch. Such pressure is capable of forcing fuel oil into human flesh.

Last January the *Journal of the American Medical Association* published a letter from a doctor subscriber asking physicians to report such accidents and their treatment, as nothing has been published on the subject.

Dr. Rees is of the opinion that in the case of such accidents a liberal incision should be made over the injured area to permit the irritant oil to escape.

Science News Letter, October 2, 1937

The newest war tanks not only trample everything in their path, but breathe out fire by means of flame-throwers.

In a campaign for clean sidewalks, a group of citizens aided by the Sanitation Department recently scrubbed pavements in New York's Times Square.

BOTANY

NATURE RAMBLINGS by Frank Thone



Indian Market-Basket

THE STORY of the Indian contribution to modern diet, even in remote lands like China and equatorial Africa, is an old one. But these plants—corn, potato, sweet potato, beans, tomato, peanut, pumpkin, etc.—were almost altogether tropical or subtropical in their origin. The Indians whom white men found cultivating corn and pumpkins in this country had learned the business, ultimately, from Mexico and Central America.

However, there were literally hundreds of species, some of them rather odd to our modern imagination, that Indians used in one part or another of temperate North America. The U. S. Department of Agriculture has published a checklist of these plants, prepared by Dr. Elias Yanovsky of the Bureau of Chemistry and Soils.

The various tribes of the semidesert Southwest, oddly enough, had rather better pickings than one might expect of the desert. They made food uses of the pulpy heart of the agave or century plants, the thick roots of the yucca, the sweet though prickly fruits of several species of cactus.

The plains and foothills tribes toward

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RADIO

October 5, 5:30 p. m., E.S.T.

SALT OF THE EARTH—Miss F. E. Harris of the U. S. Department of Interior.

October 12, 5:30 p. m., E.S.T.

INDIANS WHO MET COLUMBUS—Herbert W. Krieger of the Smithsonian Institution.

In the Science Service series of radio discussions led by Watson Davis, Director, over the Columbia Broadcasting System.

the north ate the bulbs of many wild plants of the lily family, particularly the camas, but also wild lilies and dog-tooth violets. The bitterroot, spite of its name, was an accepted food plant in the West. Fruits of a number of plants of the nightshade family were favorites, particularly those of the so-called husk tomato.

Eastern and Southeastern Indians ate all kinds of things, some of which one would never imagine a human being would trouble to gather. Nuts and berries of course were abundant and logical as foods. And we "foreigners" have learned the value of native grapes, persimmons, pawpaws, and pokeweed greens. But who would ever have ever thought of buttercup sprouts, waterlily buds, thistle stems and roots, and the tiny seeds of dodder?

Of course, the point is that the cultivated crops of Indians were small, wild plants more abundant than they are now, and perhaps palates less fussy about some of the tastes.

In all, Dr. Yanovsky lists 1,112 different species as having been used for food by North American Indians.

Science News Letter, October 2, 1937

SAFETY ENGINEERING

7,000 To Tackle Job of Cutting Accident Deaths

SEVEN thousand representatives of nearly every industry and field of endeavor in the United States will gather at Kansas City, Mo., from October 11 to 15 to help make America safe.

What to do about the 111,000 accidental deaths caused last year by automobile, airplane, factory, and home hazards will be the order of the day when the 1937 National Safety Congress is called to order.

The Congress, sponsored by the National Safety Council of Chicago, includes this year for the first time a section devoted to agricultural safety.

Science News Letter, October 2, 1937

PSYCHOLOGY

Judgments of Character Reflect Own Personality

IN THE smiles and frowns of others, we see but a reflection of our own."

That maxim has now received scientific confirmation in research to determine the accuracy with which character and personality may be judged, summarized in a report by the German Dr. Annelies Argelander to *Character and Personality*.

One person's judgment of an individual differs from another's estimate not only because each judge sees his fellows through prejudice-tinted spectacles, but also because a man, like a chameleon, changes with the company he is in. If you are a thoughtful person, your companions may assume a more serious mood as you come near; if you are gay, they will laugh with you, if you are sad, it will spoil their fun.

The estimate of a person's character depends to a great extent upon where the individual is observed. If you know

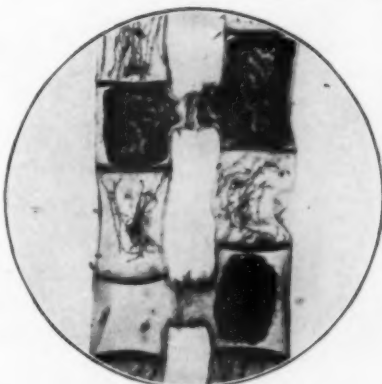
a man only in the office or in church, your verdict will be different from what it would be if you met him only at parties or relaxed at home.

Intimate friends see a person in a somewhat more favorable light than do more distant acquaintances. Their judgment is likely to correspond with the person's ideal view of himself.

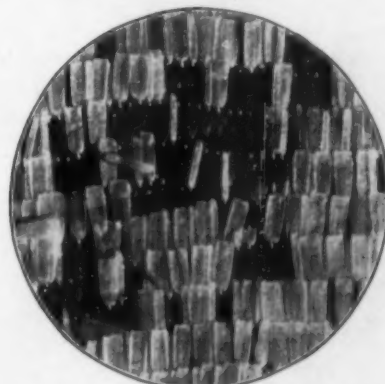
Closer observation and better understanding of one's own sex affects character judgments. Here are a few traits you are more likely to ascribe to persons of your sex: quick comprehension, accurate judgment of men, ambition, persistency, impetuosity in speech, courageousness, accessibility to new ideas, observation, demonstrativeness, natural behavior, fondness for animals. The opposite sex are considered easily despairing, tenacious of old opinions, bad observers, but absolutely trustworthy.

Science News Letter, October 2, 1937

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• First Glances at New Books

Obstetrics

MATERNAL CARE—F. L. Adair, ed.—*Univ. Chicago*, 93 p., \$1. This pamphlet has been prepared by a group of authorities as a guide to the care of mothers before, during and after childbirth and is intended for obstetricians and the nurses who work with them, in the hope of lessening sickness and deaths of mothers and infants. The material in the pamphlet has the approval of the American Committee on Maternal Welfare, Inc.

Science News Letter, October 2, 1937

Archaeology

ANCIENT CAVES OF THE GREAT SALT LAKE REGION—Julian H. Steward—*Govt. Print. Off.*, 131 p., plates, 25 c. See page 220.

Science News Letter, October 2, 1937

Aquiculture

PONDFISH CULTURE—Percy Viosca, Jr.—*Pelican Publishing Co.*, 260 p., illus., \$4. It has now become recognized as better practice to preserve and even create water areas, rather than to drain everything for agricultural purposes, for often a given piece of lowland will yield more if it is in ponds than if it is in fields. In this book a well-known Southern naturalist gives very practical instructions on the building and stocking of fishponds, thoroughly covering every essential point.

Science News Letter, October 2, 1937

Biology

GENERAL BIOLOGY STUDY-BOOK—Holger Van Aller and Dorothy Van Aller—*Globe*, 182 p., \$1.

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General Science

A DIRECTED STUDY GUIDE IN GENERAL SCIENCE FOR USE WITH ANY GENERAL SCIENCE TEXTBOOK—Jerome F. Davis, Verne U. Hutchings, Clarence P. Sharpe—*College Entrance Book Co.*, 313 p., 68 c. A workbook that should help vivify and simplify the study of the beginner in science.

Science News Letter, October 2, 1937

Public Health

HEALTH EDUCATION OF THE PUBLIC: A PRACTICAL MANUAL OF TECHNIC—W. W. Bauer and Thomas G. Hull—*Saunders*, 227 p., \$2.50. A vast multitude of books has appeared on the subject of health, all written with the aim of educating the adult public on this important subject. Hardly any books, how-

ever, have been written to teach the technique of health education of the public. This book, essentially practical and written by two men of considerable experience in the field, therefore fills a long-felt need. Its usefulness is not limited to those primarily concerned with health education but will extend to the practicing physician who must occasionally give a popular address on health.

Science News Letter, October 2, 1937

Astronomy

ECLIPSES OF THE SUN AND MOON—Sir Frank Dyson and R. v. d. R. Woolley—*Oxford Univ. Press*, 160 p., illus., \$5. Another volume in the now famous International Series of Monographs on Physics. This book is designed for physicists who have an interest in astrophysics.

Science News Letter, October 2, 1937

Physics

ATOMIC SPECTRA AND ATOMIC STRUCTURE—Gerhard Herzberg; trans. by J. W. T. Spinks—*Prentice-Hall*, 257 p., \$4.25. A much needed text serving to introduce the young graduate student to the study of atomic spectra and structure. The volume is a translation from the German. Prof. Herzberg is now at the University of Saskatchewan in Canada.

Science News Letter, October 2, 1937

Ethnology

JOURNAL OF RUDOLPH FRIEDERICH KURZ—Myrtis Jarrell, translator; J. N. Hewitt, editor—*Govt. Print. Off.*, 382 p., 48 plates, 60 c. Bur. of Amer. Ethnology Bull., 115. Experiences of a noted Swiss artist at western American trading posts, 1846 to 1852.

Science News Letter, October 2, 1937

Natural History

MÉMOIRES DE L'ACADÉMIE POLONAISE DES SCIENCES ET DES LETTRES. SÉRIE B: SCIENCES NATURELLES, No. 10, 64 p., plates, No. 11, 113 p., plates—*Polish Academy of Sciences, Krakow.*

Science News Letter, October 2, 1937

Medicine

A HANDBOOK OF SEASICKNESS—Richard Collins and Francis Kalnay—*Transatlantic*, 59 p., 50 c., plain binding, special library ed., 75 c. Amusingly written, apparently by non-medical authors, it contains, on the whole, sound advice. The author's contention is that fear of seasickness—the mental attitude—is the chief cause of the malady.

Science News Letter, October 2, 1937

Geography

40,000 AGAINST THE ARCTIC: RUSSIA'S POLAR EMPIRE—H. P. Smolka—*Morrow*, 308 p., illus., \$3.50. A foreign but friendly observer, who was permitted to travel deep into the Soviet Arctic and see the new settlements there, writes and pictures his impressions. (See also *SNL*, July 10, 1937, p. 26.)

Science News Letter, October 2, 1937

Medicine

FUNDAMENTALS OF ANATOMY—Carl C. Francis—*Mosby*, 320 p., illus., \$2.75. A difficult subject seems to be made remarkably simple and clear in this text. The illustrations and glossary should make it quite possible for the layman also to study it.

Science News Letter, October 2, 1937

Ornithology

THE BIRDS OF BREWSTER COUNTY, TEXAS—Josselyn Van Tyne and George Miksch Sutton—*Univ. of Michigan Press*, 119 p., illus., \$1.25. A copiously annotated checklist of the avifauna of a hitherto little known part of the Big Bend region.

Science News Letter, October 2, 1937

Medicine

THE PATIENT AND THE WEATHER. Vol. IV.: Pt. 2: ORGANIC DISEASE—William F. Petersen and Margaret E. Milliken—*Edwards*, 729 p., \$11. In this volume Dr. Petersen and his assistant take up the relation of weather to diseases of the thyroid gland, diabetes, blood diseases and tuberculosis.

Science News Letter, October 2, 1937

Medicine

SYNOPSIS OF DIGESTIVE DISEASES—John L. Kantor—*Mosby*, 302 p., illus., \$3.50. A convenient handbook for medical students, internes and possibly even practising physicians. Diets and anatomical drawings add to the value of the text.

Science News Letter, October 2, 1937

Botany

LABORATORY OUTLINE FOR ELEMENTARY BOTANY (4th ed.)—Chester A. Arnold, Kenneth L. Jones, William C. Steere—*George Wahr*, 57 p., 90 c.

Science News Letter, October 2, 1937

Geography

FOUNDATION OF GEOGRAPHY—Richard Elwood Dodge and Stanley Dalton Dodge—*Doubleday, Doran*, 490 p., illus., \$3.75. A well-filled-out, well-balanced textbook giving particular attention to human activities as affected by geographic factors.

Science News Letter, October 2, 1937